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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/073,246 | 02/13/2002 | Yoshimasa Iiduka | 1081.1137 | 4438 |

21171 7590 05/14/2004

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EXAMINER

ROSSOSHEK, YELENA

| | |
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| ART UNIT | PAPER NUMBER |
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2825

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,246

Applicant(s)

IIDUKA ET AL.

Examiner

Helen B Rossoshek

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1, 4, 5, 8, 9 and 12 are objected to because of the following informalities:

Claims 1, 5 and 9 (specially first and second limitations) are formulated indefinite in terms of creating the corrected exposure data (third limitation) out of exposure pattern and not out of exposure pattern data.

Claims 1, 5, 8 and 9 have antecedent basis issue.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4, 8 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The formulation of the claims is not clear whether the Applicant meant to describe two types of the optical proximity correction process and choosing one or another based on comparison of the number of pattern after a first OPC. It is also unclear under what condition the first and second OPC is performed and what first OPC and second OPC are.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Futrell et al. (US Patent 6,238,824).

With respect to claims 1, 5, 9 and 13 Futrell et al. teaches a correction processing step (unit) of converting an exposure pattern to be corrected, which is subject to an optical proximity effect, of the plurality of exposure patterns, into a minus objective pattern and a minus pattern to be deleted from the minus objective pattern, to generate the corrected exposure data as shown on the Fig. 3B the contacts (11) (exposure pattern) are one of the plurality of the initial reticle layouts (col. 5, ll.16-26) and subject to be corrected using OPC technique by adding the alignment budget borders (13) (converting into a minus objective pattern and minus pattern to be deleted from the minus objective pattern) as the correction area (12) shown on the Fig. 4 including the analysis of the difference between the circuit layout and the exposure pattern determining the area to be removed (minus patterns) from the area to be corrected (minus objective pattern) (col. 8, ll.64-67); a bitmap processing step of deleting the minus pattern from the minus objective pattern of the corrected exposure data, to bitmap the corrected exposure pattern by subtracting areas (minus patterns) from initial reticle layout (corrected exposure pattern) after using first step of the OPC technique for close correspondence to the desired pattern (col. 3, ll.35-42; Fig. 5); an

exposure step of exposing the substrate in accordance with the bitmapped corrected exposure pattern using OPC technique to generate one or more modified reticle layout portions, having this modified reticle layout onto a resist, which will be exposed in a pattern including the features more closely approximate the corresponding features in the circuit layout (col. 7, ll.14-19).

With respect to claims 2-4, 6-8 and 10-12 Futrell et al. teaches in the case of the optical proximity correction for preventing corners of the exposure pattern from being rounded, the exposure pattern to be corrected is converted, in the correction processing step, into the minus objective pattern which is an enlarged one of the exposure pattern to be corrected and into the minus pattern positioned at center on sides of the minus objective pattern as shown on the Figs. 3B and 4 the exposure pattern (11) having the alignment budget borders (13) as an additional area for the pattern (11) to enlarge it (col. 7, ll.54-56) creating the area (14) to be deleted (minus patterns) (col. 8, ll.13-14); in the case of the optical proximity correction for preventing an enlargement at position confronting adjacent other pattern in a linear exposure pattern, the exposure pattern to be corrected is converted, in the correction processing step, into the minus objective pattern consisting of the exposure patterns to be corrected and the minus pattern at the position confronting the adjacent other pattern by adding an alignment budget border around the outside of each reticle (enlargement) to be corrected, preferable to only one of each pair of adjacent reticle features by determined or calculated size (col. 7, ll.35-37; ll.43-46; 48-50); if the number of patterns after conversion is smaller in a second optical proximity correction processing for converting the exposure pattern to be corrected into

the minus objective pattern and the minus pattern, than in a first optical proximity correction processing for converting the exposure pattern to be corrected into a plurality of division exposure patterns obtained by dividing the corrected exposure patterns after the optical proximity correction, then the second optical proximity correction processing; and the correction processing unit, if the number of patterns after conversion is greater in the second optical proximity correction processing than in the first optical proximity correction processing, carrying out the first optical proximity correction processing within the ability of generating one or more modified reticle layouts using any correction technique without limitations on the types of corrections or the manner of generating those corrections (col. 5, ll.16-30).

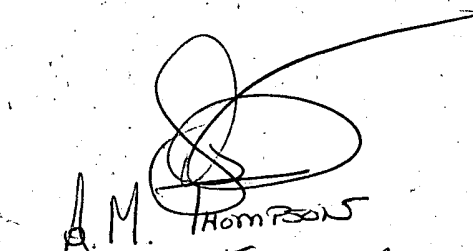
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen B Rossoshek whose telephone number is 571-272-1905. The examiner can normally be reached on 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HR


D.M. THOMPSON
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800